Docket No.: AMB-131-01

MAIL STOP: APPEAL BRIEF-PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Before the Board of Patent Appeals and Interferences

Applic. No.	:	10/770,616	Confirmation No.: 2302
Inventor	:	Wolfgang Eis et al.	
Filed	:	February 2, 2004	
Title	:	Device and method for making up optical fibers	
TC/A.U.	:	1791	
Examiner	:	Queenie S. Dehghan	
Customer No.	:	24131	

Hon. Commissioner for Patents
Alexandria, VA 22313-1450

BRIEF ON APPEAL

S i r :

This is an appeal from the final rejection in the Office action dated December 7, 2007, finally rejecting claims 1 - 6, 9 and 11 - 26.

Appellants submit this *Brief on Appeal* including payment in the amount of $510.00 to cover the fee for filing the *Brief on Appeal*.

Real Party in Interest:

This application is assigned to Schott GLAS of Mainz, Germany. The assignment will be submitted for recordation upon the termination of this appeal.

Related Appeals and Interferences:

No related appeals or interference proceedings are currently pending which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

Status of Claims:

Claims 1 - 6, 9 and 11 - 26 are rejected and are under appeal. Claims 27 - 42 are withdrawn from consideration. Claims 7, 8, and 10 are canceled.

Status of Amendments:

No claims were amended after the final Office action.

Summary of the Claimed Subject Matter:

The subject matter of each independent claim is described in the specification of the instant application. Examples explaining the subject matter defined in each of the independent claims, referring to the specification by page and line numbers, and to the drawings, are given below.

Independent claim 1 reads as follows:

A device [page 36, line 16; 1 in the figure] for making up a plurality of optical fibers [page 36, lines 18-19; 2 in the figure], comprising:

a multifiber drawing machine [page 8, line 17] having a drawing installation [page 36, line 19; 3 in the figure] and a take-up winder [page 36, line 19; 4 in the figure];

said drawing installation [page 36, line 19; 3 in the figure] being configured to synchronously produce a plurality of individual optical fibers [page 36, lines 18-19; 2 in the figure], and said drawing installation [page 36, line 19; 3 in the figure] being configured to provide a drawing rate [page 10, lines 4-11] for drawing the plurality of individual optical fibers [page 36, lines 18-19; 2 in the figure] such that the drawing rate [page 10, lines 4-11] is substantially constant and substantially identical for each of the optical fibers [page 36, lines 18-19; 2 in the figure];

said take-up winder [page 36, line 19; 4 in the figure] having a take-up spool [page 38, lines 6-7; 17 in the figure] and a compensating device [page 39, line 23; 5 in the figure];

said take-up spool [page 38, lines 6-7; 17 in the figure] taking up the optical fibers [page 36, lines 18-19; 2 in the figure];

said compensating device [page 39, line 23; 5 in the figure] being configured such that, when the optical fibers [page 36, lines 18-19; 2 in the figure] have respective different speeds [page 39, lines 17-19] at said drawing installation [page 36, line 19; 3 in the figure] and at said take-up spool [page 38, lines 6-7; 17 in the figure], said compensating device [page 39, line 23; 5 in the figure] compensates [page 39, line 17 through page 40, line 7] for differences in speed [page 39, lines 17-19] between

said drawing installation [page 36, line 19; 3 in the figure] and said take-up spool [page 38, lines 6-7; 17 in the figure];

said compensating device [page 39, line 23; 5 in the figure] having a speed-change compensating device [page 37, lines 13-16; 12 and 13 in the figure] for compensating a change in speed of a fiber bundle [page 37, line 15; 2 in the figure] wound in layers onto said take-up spool [page 38, lines 6-7; 17 in the figure], said speed-change compensating device [page 37, lines 13-16; 12 and 13 in the figure] configured to compensate a change in speed in at least one situation selected from the group consisting of a change in speed of the fiber bundle [page 37, line 15; 2 in the figure] when changing from one of the layers to another one of the layers [page 40, lines 11-14] and a change in speed of the fiber bundle resulting from a changing radius [page 39, lines 17-25] of the layers wound-up on said take-up spool [page 38, lines 6-7; 17 in the figure];

said speed-change compensating device [page 37, lines 13-16; 12 and 13 in the figure] having a dancing arm [page 37, lines 13-16; 12 in the figure] fastened at a mounting point [page 37, line 18; 14 in the figure];

said speed-change compensating device [page 37, lines 13-16; 12 and 13 in the figure] having a deflection roller [page 37, line 16; 13 in the figure] for guiding the fiber bundle [page 37, line 15; 2 in the figure];

said deflection roller [page 37, line 16; 13 in the figure] rotatably fastened to said dancing arm [page 37, lines 13-16; 12 in the figure] such that said deflection roller

[page 37, line 16; 13 in the figure] is held on one side of said dancing arm [page 37, lines 13-16; 12 in the figure] and such that said deflection roller [page 37, line 16; 13 in the figure] is pivotable [page 37, line 20] about the mounting point [page 37, line 21; 14 in the figure] of said dancing arm [page 37, line 16; 12 in the figure] in a plane substantially parallel to a plane of rotation [page 15, line 2] of said take-up spool [page 38, lines 6-7; 17 in the figure]; and

said deflection roller [page 37, line 16; 13 in the figure] held on said dancing arm [page 37, lines 13-16; 12 in the figure] such that said deflection roller [page 37, line 16; 13 in the figure], in addition to performing a pivoting movement about the mounting point [page 37, line 21; 14 in the figure] of said dancing arm [page 37, lines 13-16; 12 in the figure], can oscillate separately [page 37, lines 18-21, also page 40, lines 9-11] with respect to the pivoting movement.

<u>Grounds of Rejection to be Reviewed on Appeal</u>

1. Whether or not claims 1 - 3, 9, 14, 16 - 22, and 26 are anticipated by Fulk et al. (3,847,579) under 35 U.S.C. § 102.

2. Whether or not claim 4 is obvious over Fulk et al. in view of Collaro (2005/0126227) under 35 U.S.C. § 103.

3. Whether or not claims 5 - 6 and 15 are obvious over Fulk et al. in view of Collaro and further in view of Hendrix et al. (4,130,248) under 35 U.S.C. § 103.

4. Whether or not claims 11 - 13 are obvious over Fulk et al. in view of Canfield (3,650,717) under 35 U.S.C. § 103.

5. Whether or not claims 23 - 25 are obvious over Fulk et al. in view of Stream et al. (2,622,810) under 35 U.S.C. § 103.

Argument:

Claims 1 - 3, 9, 14, 16 - 22, and 26 are not anticipated by Fulk et al. under 35 U.S.C. § 102

Claim 1 specifies that the deflection roller 13 is held on the dancing arm 12 such that the deflection roller 13, in addition to performing a pivoting movement about the mounting point 14 of the dancing arm 12, can oscillate separately with respect to the pivoting movement. The reference numerals have been added to assist the honorable Board in understanding the claimed invention in view of the exemplary embodiment described in the specification and shown in the drawing figure.

Appellants point out that the claimed deflection roller performs a pivoting movement about the mounting point and oscillates separately with respect to this pivoting movement about the mounting point.

Fulk et al. do not teach a deflection roller that can oscillate separately with respect to a pivoting movement about the mounting point. Fulk et al. teach a roller 54 that is attached to a shaft 182 by an arm 56 and that oscillates or pivots about the shaft 182. This shaft 182, however, does not somehow undergo a vertical movement, a horizontal movement, or any other type of translational movement to enable a separate movement of the roller 54.

In the Advisory action mailed on May 12, 2008, the Examiner stated, “Fulk dislose a deflection roller with a pivoting movement about arms 220 and 210 in figure 7”. The Examiner’s understanding of the operation of the arms 220 and 210, however, is incorrect. The arms 220 and 210, which are pivotally connected together by a joint, do not act to impart any type of separate or additional motion to the roller 54. Rather, the arms 220 and 210 act to dampen the rotation of the shaft 182 and thereby to dampen the pivoting or oscillating motion of the roller 54 that is caused when the roller 54 is pulled or jerked down rapidly by the strands running over the roller 54. The damping mechanism 200, which is connected to the shaft 182 by the arms 220 and 210, imparts a dampening force opposing rotation of the shaft 182 in order to prevent the roller 54 and the arm 56 from quickly pivoting about the shaft 182 to a large degree. It is clear that the arms 220 and 210 do not impart a movement to the roller 54 that is separate from the movement about the shaft 182. The joint connecting the arms 220 and 210 only assists in transferring the damping force from the damping mechanism 200 to the shaft 182 of the potentiometer 175 in order to prevent a large and quick rotation of the shaft 182 when the strands pull down hard and quickly on the roller 54.

Appellants have summarized the true teaching of Fulk et al. above and believe it should be clear that the claimed invention is not anticipated. Appellants, however, will additionally discuss the specific teaching in Fulk et al. in more detail immediately below.

Fulk et al. teach that one end of an arm 56 is attached to a roller 54 and the other end of the arm 56 is fixedly attached to the shaft 182 of a potentiometer 175. The shaft 182 of the potentiometer 175 extends through the wall 184 of the housing 42, and the potentiometer 175 is also supported in the housing 42. The potentiometer 175 and more importantly the shaft 182 of the potentiometer 175 are mounted at a fixed location in the housing. Whereas the shaft 182 rotates, the shaft 182 does not somehow additionally move in a vertical or horizontal direction. This can be seen by referring to the plan view shown in Fig. 6, the elevational view shown in Fig. 7, and to column 9, lines 20-36 of Fulk et al.

A spring 58 is used to provide a biasing force to the arm 56 and to urge the arm 56 to pivot in a clockwise direction about the shaft 182 of the potentiometer 175. The resistance of the potentiometer 175 is used to control the speed of the collet 80 in dependence on the tension that the strand applies to the roller 54. If the strand pulls the roller 54 downward, the shaft 182 of the potentiometer 175 is rotated counterclockwise and the resistance of the potentiometer 175 is used to reduce the speed of the collet 80. If the strand enables the roller 54 to move upward above a horizontal position, the shaft 182 of the potentiometer 175 is rotated clockwise and the resistance of the potentiometer 175 is used to increase the speed of the collet 80 (See column 9, line 37 through column 10, line 20).

Fulk et al. teach that the strand may impart a jerked downward movement to the arm 56 and to the roller 54, and that this jerked downward movement can cause a loss of contact between the roller 54 and the strand (See column 10, lines 21-53). In order to overcome this problem, Fulk et al. teach a damping mechanism 200,

and appellants believe the Examiner has misunderstood the teaching relating to the damping mechanism 200. The arms 210 and 220 are pivotally connected together, however this pivotal connection does not somehow enable the shaft 182 of the potentiometer 175 to perform a horizontal movement, a vertical movement, or some other type of translational movement. Note that the arm 220 is <u>fixedly connected</u> to the shaft 182 of the potentiometer 175 (See column 10, lines 56-59). When the strand jerks the roller 54 downward, the shaft 182 of the potentiometer 175 is influenced to rotate in the counterclockwise direction. In response to the movement of the shaft 182, the arm 220, which is <u>fixedly mounted</u> to the shaft 182, rotates about the shaft 182. The end of the arm 220, which is <u>joined</u> to the arm 210, causes the arm 210 to move in the left direction towards the damping mechanism 200. Since the damping mechanism 200 provides opposition to this horizontal movement of the arm 210, since the arm 210 is <u>joined</u> to the arm 220, and since the arm 220 is fixedly mounted to the shaft 182, the opposition to the horizontal movement of the arm 210 creates an opposition to the rotation of the shaft 182. In this manner, the jerked movement caused by the strand is damped (See column 10, line 54 through column 11, line 20).

It is clear that the shaft 182 of the potentiometer 175 only rotates and does not somehow undergo a vertically movement, a horizontally movement, or some other type of translational movement. Therefore it is clear that the roller 54 only pivots about the shaft 182 of the potentiometer 175.

In the Advisory action, the Examiner referred to an upward and downward movement of the deflection spool and has alleged that this movement constitutes

an oscillation movement about a point separate from the pivot point. As should be clear from the preceding discussion, however, this so-called oscillation movement occurs about the shaft 182 of the potentiometer 175. In the Advisory action, the Examiner also referred to a pivoting movement about the arms 220 and 210. The so-called pivoting movement between the arms 220 and 210, however, does not cause any pivoting or oscillation of the roller 54, but rather only serves to dampen the jerked movement of the roller 54 about the shaft 182 of the potentiometer 175.

In contrast to the invention as defined by claim 1, Fulk et al. do not teach a deflection roller that is held on a dancing arm such that the deflection roller, in addition to performing a pivoting movement about the mounting point of the dancing arm, can oscillate separately with respect to the pivoting movement.

The invention as defined by claims 1 - 3, 9, 14, 16 - 22, and 26 is not anticipated by Fulk et al.

Claim 4 is not obvious over Fulk et al. in view of Collaro under 35 U.S.C. § 103

Even if there were a suggestion to combine the references, the invention as defined by claim 4 would not have been obtained for the reasons given above with regard to the invention as defined by claim 1 and the teaching in Fulk et al.

Claims 5 - 6 and 15 are not obvious over Fulk et al. in view of Collaro and further in view of Hendrix et al. under 35 U.S.C. § 103

Even if there were a suggestion to combine the references, the invention as defined by claims 5 - 6 and 15 would not have been obtained for the reasons given above with regard to the invention as defined by claim 1 and the teaching in Fulk et al.

Claims 11 - 13 are not obvious over Fulk et al. in view of Canfield under 35 U.S.C. § 103

Even if there were a suggestion to combine the references, the invention as defined by claims 11 - 13 would not have been obtained for the reasons given above with regard to the invention as defined by claim 1 and the teaching in Fulk et al.

Appellants traverse the rejection of claim 11 and claim 12, which depends from claim 11, for additional reasons. The Examiner has alleged that it would have been obvious to use the elastic material suggested by Canfield in the apparatus of Fulk et al. in order to provide proper tension on the fiber and to provide a dancing arm that can withstand the strain due to the tension. Appellants believe that the Examiner has misunderstood the teaching in Canfield.

Canfield teaches constructing a transducer 50 on a flexible leg 52 in which stresses and strains from the strand 22 induce forces on the transducer 50 in order to create resistive changes in the piezo-resistive strain gauges 71, 72 that the comprise the transducer 50. The resistive changes correspond to the tensile forces induced on the transducer 50 by the strand 22, and a bridge 70 is used to generate an electrical signal to indicate the tensile forces (see column 4, lines 5-13 and column 7, lines 4-29). It should be clear that this teaching is simply a transducer

arrangement that is provided in order to measure the tensile forces in the strand (see column 3, lines 45-51). The electrical signal that indicates the tensile forces on the strand is used to regulate the speed of the collet 35 in order to keep a constant tension on the strand 22 (see column 7, lines 68-73).

Contrary to the allegation made by the Examiner, Canfield does not teach that the transducer arrangement itself provides a proper tension on the fiber strand and there is no teaching that the arm or flexible leg 52 is provided to withstand the strain due to tension. Canfield merely teaches a particular transducer arrangement in which strain gauges 71, 72 are placed on opposite sides of a flexible leg 52 in order to measure the tension that exists on the strand. It is clear that the purpose of the flexible leg 52 is to provide a carrier for the mounting the stain gauges 71, 72 on opposite sides thereof.

Fulk et al. teach a different type of arrangement for measurement purposes in which the resistance of the potentiometer 175 gives an indication of the pivoting movement of the shaft 182 and thereby gives an indication of the tension of the strand (See column 9, lines 29-36). The potentiometer 175 is connected to the shaft 182, which defines the pivot point.

First of all and most importantly, if the arm 56 of Fulk et al. were constructed from an elastic material as the Examiner has alleged is obvious, the tension sensing arrangement would no longer provide an accurate indication of the tension on the strand. **The elastic material would bend somewhat and the distance that the arm 56 pivots about the axis of the shaft 182 would no longer give a proper**

indication of the tension of the strand. The Examiner's assertion for modifying the teaching is not valid. One of ordinary skill in the art would not have been provided with a suggestion to make a modification in which the resulting structure would be unsuitable for its intended purpose.

Secondly, Fulk et al. and Canfield simply teach two different types of tension sensing structures. There is no teaching or suggestion of any sort of advantage that would result from combining certain parts of the different tensing sensing structures. One of ordinary skill in the art would not have been motivated to combine two different types of sensing structures that would appear to have equivalent functionality.

Third, the Examiner has stated that it would have been obvious to use the elastic material suggested by Canfield in the apparatus of Fulk et al. in order to provide proper tension on the fiber. Appellants point out that Fulk et al. and Canfield teach tension sensing structures. If these sensing structures were modified to impart tension on the strand, the tension measurements would be inaccurate. Appellants assert that one of ordinary skill in the art would not have been motivated to perform the modification asserted by the Examiner because if one were to impart a tension to the strand, the tension measurements would be affected.

The invention as defined by claim 11 and claim 12, which depends form claim 11, are not obvious over Fulk et al. in view of Canfield for the additional reasons given above.

Claims 23 - 25 are not obvious over Fulk et al. in view of Stream et al. under 35 U.S.C. § 103

Even if there were a suggestion to combine the references, the invention as defined by claims 23 - 25 would not have been obtained for the reasons given above with regard to the invention as defined by claim 1 and the teaching in Fulk et al.

The honorable Board is therefore respectfully urged to reverse the final rejection of the Primary Examiner.

Any fees due should be charged to Deposit Account No. 12-1099 of Lerner Greenberg Stemer LLP.

Respectfully submitted,

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Claims Appendix:

1. A device for making up a plurality of optical fibers, comprising:

a multifiber drawing machine having a drawing installation and a take-up winder;

said drawing installation being configured to synchronously produce a plurality of individual optical fibers, and said drawing installation being configured to provide a drawing rate for drawing the plurality of individual optical fibers such that the drawing rate is substantially constant and substantially identical for each of the optical fibers;

said take-up winder having a take-up spool and a compensating device;

said take-up spool taking up the optical fibers;

said compensating device being configured such that, when the optical fibers have respective different speeds at said drawing installation and at said take-up spool, said compensating device compensates for differences in speed between said drawing installation and said take-up spool;

said compensating device having a speed-change compensating device for compensating a change in speed of a fiber bundle wound in layers onto said take-up spool, said speed-change compensating device configured to compensate a change in speed in at least one situation selected from the group consisting of a change in speed of the fiber bundle when changing from one of the layers to

another one of the layers and a change in speed of the fiber bundle resulting from a changing radius of the layers wound-up on said take-up spool;

said speed-change compensating device having a dancing arm fastened at a mounting point;

said speed-change compensating device having a deflection roller for guiding the fiber bundle;

said deflection roller rotatably fastened to said dancing arm such that said deflection roller is held on one side of said dancing arm and such that said deflection roller is pivotable about the mounting point of said dancing arm in a plane substantially parallel to a plane of rotation of said take-up spool; and

said deflection roller held on said dancing arm such that said deflection roller, in addition to performing a pivoting movement about the mounting point of said dancing arm, can oscillate separately with respect to the pivoting movement.

2. The device according to claim 1, wherein said drawing installation is configured to bring the optical fibers together and to form the fiber bundle from the optical fibers.

3. The device according to claim 2, wherein said take-up winder has a fiber guiding unit configured to continuously lay the fiber bundle on said take-up spool.

4. The device according to claim 3, wherein:

said fiber guiding unit has at least one controllable excursion mechanism and a fiber guide with a guiding roller for laying the fiber bundle over the take-up spool; and

said at least one controllable excursion mechanism acts on said fiber guide.

5. The device according to claim 4, wherein said take-up winder has a layer-compensating device configured to adapt said fiber guiding unit to at least one winding condition selected from the group consisting of a change in a wound-up radius on said take-up spool and a change in a winding width for layers of the optical fibers on said take-up spool.

6. The device according to claim 3, wherein:

said fiber guiding unit has a fiber guide with a guiding roller for laying the fiber bundle over the take-up spool;

said take-up winder has a layer-compensating device configured to adapt said fiber guiding unit to at least one winding condition selected from the group consisting of a change in a radius of the layers wound-up on said take-up spool and a change in a winding width for layers of the optical fibers on said take-up spool;

said layer-compensating device has at least one controllable excursion mechanism for controlling a traveling displacement of at least one element selected from the group consisting of said fiber guide and said guiding roller; and

said at least one controllable excursion mechanism controlling the traveling displacement in dependence on a number of layers of the optical fibers on said take-up spool such that the traveling displacement is controlled in at least one direction selected from the group consisting of a direction substantially parallel to an axis of rotation of said take-up spool and a direction substantially radial with respect to the axis of rotation of said take-up spool.

9. The device according to claim 1, wherein said deflection roller and said take-up spool have respective axes of rotation substantially parallel to one another.

11. The device according to claim 1, wherein said dancing arm is an elastic arm including an elastic material with a given modulus of elasticity such that said deflection roller fastened thereto has a given oscillating capability.

12. The device according to claim 11, wherein said dancing arm is a plastic arm.

13. The device according to claim 1, wherein said dancing arm has at least one property selected from the group consisting of a given material thickness and a given shape such that said deflection roller fastened thereto has a given oscillating capability.

14. The device according to claim 1, including:

an angular resolver, said dancing arm being assigned to said angular resolver at said mounting point; and

a speed controller operatively connected to said angular resolver, said angular resolver transmitting data on angles of rotation to said speed controller for controlling a take-up rate of said take-up spool.

15. The device according to claim 5, including:

a central data processing unit operatively connected to at least one of said compensating device and said layer-compensating device; and

said central data processing unit controlling at least one of said compensating device for compensating for differences in speeds and said layer-compensating device for adapting said fiber guiding unit.

16. The device according to claim 1, wherein said dancing arm has an equilibrium position and is configured to be acted upon by a compensating force such that said dancing arm is adjustable to the equilibrium position by the compensating force when drawing the optical fibers and taking up the fiber bundle on said take-up spool.

17. The device according to claim 16, including a cylinder operatively connected to said dancing arm for providing the compensating force, said cylinder being selected from the group consisting of a pneumatic cylinder and a hydraulic cylinder.

18. The device according to claim 1, wherein said dancing arm has a neutral position and is configured to be acted upon by a compensating force such that said dancing arm is adjustable to the neutral position by the compensating force in case of an interruption or abnormal termination of the drawing and the taking up of the plurality of optical fibers.

19. The device according to claim 18, including a cylinder operatively connected to said dancing arm for providing the compensating force, said cylinder being selected from the group consisting of a pneumatic cylinder and a hydraulic cylinder.

20. The device according to claim 1, wherein said dancing arm is configured to set a tension in the fiber bundle.

21. The device according to claim 20, including a cylinder operatively connected to said dancing arm for setting the tension in the fiber bundle, said cylinder being selected from the group consisting of an adjustable pneumatic cylinder and an adjustable hydraulic cylinder.

22. The device according to claim 1, wherein said take-up spool is fastened as an exchangeable take-up spool.

23. The device according to claim 3, further comprising:

a replacement spool located axially adjacent said take-up spool and located under said fiber guiding unit for laying the fiber bundle on said replacement spool;

said take-up spool being removable when full.

24. The device according to claim 3, further comprising:

a replacement spool located axially adjacent said take-up spool;

said fiber guiding unit traveling over said replacement spool for laying the fiber bundle on said replacement spool; and

said take-up spool being removable when full.

25. The device according to claim 3, including:

a central data processing unit operatively connected to said compensating device;

said take-up spool having a spool axis and being configured as an exchangeable take-up spool to be exchanged when full;

a replacement spool being placed adjacent to said take-up spool in a direction of the spool axis such that, when said take-up spool is full, the fiber bundle changes from said take-up spool to said replacement spool; and

said central data processing unit controlling, via said compensating device, a rotational speed of said replacement spool by at least one of a closed-loop control and an open-loop control when the fiber bundle changes from said take-up spool to said replacement spool.

26. The device according to claim 1, wherein said drawing installation synchronously produces a plurality of individual multicomponent optical fibers.

Evidence Appendix:

No evidence pursuant to §§ 1.130, 1.131, or 1.132 or any other evidence has been entered by the Examiner and relied upon by appellant in the appeal.

Related Proceedings Appendix:

No prior or pending appeals, interferences or judicial proceedings are in existence which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in this appeal. Accordingly, no copies of decisions rendered by a court or the Board are available.